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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,680	10/18/2005	Osamu Nomura	Q86054	1762
65565 7590 03/19/2009 SUGHRUE-265550 2100 PENNSYLVANIA AVE. NW WASHINGTON, DC 20037-3213				
EXAMINER HOGAN, JAMES SEAN				
ART UNIT		PAPER NUMBER		
3752				
MAIL DATE		DELIVERY MODE		
03/19/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/522,680

Applicant(s)

NOMURA ET AL.

Examiner

JAMES S. HOGAN

Art Unit

3752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/US)
Paper No(s)/Mail Date 10/10/08
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Examiner Note

This action is in response to Notice of Withdrawal from Issue under 37 CFR.

1.313 sent January 14, 2008. It has been determined that art of record, notably, U.S. Patent No 4,977,950 to Muench et al in view of Japanese Patent 2001/105106 A to Mori et al reads upon the most recently amended claims, as explained below.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-12 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 5,328,064 to 4,977, 950 to Muench in view of Japanese Patent No. JP 2001/105106 A to Mori et al

As per claims 1, 2, 7, 8, and 9, Muench teaches a casting nozzle with a molten steel flow hole portion (46) in which a plurality of independent protrusion portions and/or concave portions discontinuous in both directions parallel and perpendicular (48) to a molten steel flowing direction are disposed, wherein each of said protrusion portions and/or concave portions has a size definition. Muench does not necessarily teach satisfying and expressions where the height (H) of a protrusion is greater than or equal to 2 mm, with the length (L) of the protrusion or concave portion is greater than 2 times (H) in mm. Mori et al teaches forming the internal surface of a molten nozzle with

protrusions that greater than or equal to 2 mm, with the length (L) of the protrusion or concave portion is greater than 2 times (H) in mm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have sized the protrusions of Muench as taught by Mori et al in order to guarantee molten steel flow.

As per claim 2, it would further be obvious to proclaim (l) to be less than or equal to $\pi D/3$ where D is the inner diameter of the nozzle outlet, or where (as per claim 7), the protrusions and/or concave portions separated by no more than 20mm, or as per claims 8 and 9 where dimensions of a protrusion is heels between 2-20 mm and the nozzle outlet hole is held to being not smaller than 4 mm as to utilize a proportional formula for a size a protrusion or concave portion size since our reviewing courts have held that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984).

As per claim 3, Muench does not teach the protrusions being 102%-350% as large as the inner surface of the inner surface of the molten steel path, however, since it has been held that where the general conditions of a claim are discloses in the prior art, discovering the optimum or working ranges involves only routine skill in the art. See *in re Aller*, 105 USPQ 233.

As per claim 4, the nozzle of Muench is taught to a zigzag pattern that positions are displaced at least in the direction perpendicular to the molten steel flowing direction (See figure 4).

As per claim 5, Muench teaches protrusion portions that are apparently disposed in the whole or part of the molten steel flow hole portion of the casting nozzle.

As per claim 6, Muench does not teach, per se, the protrusions not being higher than a meniscus (understood to be a water level present, as per page 14 of the Specification) of the nozzle, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have proclaimed the water level as a variable of the nozzles usage, and therefore as a Mechanical expedient. It's obvious to one skilled in the art to use routine experimentation to arrive at optimum values (i.e. the water level) to meet the needs of the user for the environment in which the apparatus is to be used as such would be a choice of mechanical expedients.

As per claim 10, the angles depicted of protrusions in a direction parallel to molted steel flow in the invention of Muench et al appear top be at or about 60°, however, since it has been held that discovering a result effective variable (i.e. the angle of the protrusions) involves only routine skill in the art. See *In re Boesch*, 617 F.2d 272, 205 USOPQ 215 (CCPA 1980)

As per claim 11, the protrusions are molded to be integrated with the body of the casting nozzle.

As per claim 12, the invention of Muench is taught to be an immersion nozzle for casting steel See Abstract.

As per claim 13, the protrusions of Muench are elliptical.

As per claim 14, a presumed rough area in the direction perpendicular to the molten steel flowing direction of the nozzle of Muench comprises discontinuous circumferential segments.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES S. HOGAN whose telephone number is (571)272-4902. The examiner can normally be reached on Mon-Fri, 6:00a-3:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 3752

/J. S. H./

Examiner, Art Unit 3752

/Len Tran/

Supervisory Patent Examiner, Art Unit 3752